

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of)	
)	
Inquiry Regarding Carrier Current Systems,)	ET Docket No. 04-37
including)	ET Docket No. 03-104
Broadband over Power Line Systems (BPL))	FCC 04-29
)	
)	

COMMENTS TO NOTICE OF PROPOSED RULE MAKING

GREETINGS:

As so aptly reported by numerous commenters in this, the above-captioned proceeding, the proposed Broadband over Power Line carrier current systems have clear potential to disrupt wireless communications across the entire High Frequency (HF) spectrum, along with certain other bands. While substantial attention has been most rightly directed toward protecting licensed Amateur Radio Service operations (*see ARRL comments*), it is paramount to note that all HF spectrum (3 to 30 MHz) needs to be likewise protected from any and all spectrum pollution.

One particular authorized radio service of vital concern within the HF spectrum is the 27 MHz Citizens Band (CB) Radio Service (47 CFR Part 95D). Contrary to what many would *assume* to constitute conventional wisdom, CB radio product acquisition and use remains vibrant today, and even more so over the past several years! *I cannot emphasize enough that the role of CB radio in present times is not to be underestimated.* One of the most often misunderstood subjects, a matter close to the heart of tens of millions of wireless consumers, is the present state of 27 MHz CB radio popularity and usage. Whether or not any of us are old enough to remember the explosive popularity of CB radio during the 1970's, nearly everyone even

remotely familiar with CB has some knowledge of that decade's greatest fad. Fads, by definition, come and go. Nevertheless, sustained popularity of CB radio has been steadily *increasing* since the close of the 1970's.

DISCUSSION

When the CB craze of the seventies faded just as rapidly as it had arrived, many people both within and without the CB world summarily concluded that CB radio was either dead or dying. Aside from the fad though, how has CB radio popularity fared over the last two-plus decades? Even disregarding the entire CB craze phenomenon of the mid-1970's, a number of communications volunteers and hobbyists, as well as occupational users and professionals, seem to feel that interest in CB radio has been on a steady decline over the past twenty years. *But, is this assumption valid?*

For the many of us who lived the CB fad in the mid-1970's, it is an all-to-easy, though not at all accurate, conclusion. In 1976, all 23 CB channels (at that time) were loaded with traffic, in nearly every part of the country. The three main trucking channels then; 10, 15, and 21, were busy round-the-clock in even the sparsest areas, if they were within range of any major highway. *Today*, professional truckers nearly everywhere in the US are concentrated on one particular channel: Channel 19. The remainder of the 40 channels we have today enjoy sporadic usage, including Single-SideBand (SSB) operations on channels 35-40, and several of the lower channels with AM mode communications. Given that present-day CB operations are somewhat less frequency-distributed than in previous times, what is the conclusion to which so many of us are too quick to jump? Simple: CB radio popularity has been on the decline, right? No!

Jumping to such a conclusion robs us of seeing some highly relevant realities. How then, can we see what is really going on? In the course of my own research over the years, I have

noticed an unfortunate dearth of statistics on CB radio use, sales, manufacturing and imports, or much else telling. Finally however, in early 2003, I caught up with a group of researchers at Michigan State University. There, the *National Science Foundation* had launched a major multi-year research project on CB radio popularity in the US, and researchers have completed a preliminary round of source material gathering. I am privileged that Research Associate Ms. Carol Ting has provided rudimentary but statistically significant figures and qualified observations for my use in compiling facts for publication, and appearing in this very comments' *Background* section. Much of what Ms. Ting has written, I paraphrase below. What these researchers have found, we may find quite surprising and enlightening!

BACKGROUND

Just how big was the CB radio fad of the 1970's? Staggering! CB radio sales soared from just under two million units in 1974 to over 11 million in 1976. Sales volume began plummeting just a year later, however. By 1979, annual sales volume had dipped to just under two million; about the same sales level seen just before the fad.

Research shows two main factors that spurred the beginning of the CB fad. One was motorists' need for fuel availability while on the highway during the Arab oil embargo. This was tightly coupled with the effect of the nationwide speed limit of 55 MPH and motorists' keen interest in related enforcement activity. The second factor was massive media attention in newspapers and magazines. Additionally, several country-western genre songs about truckers' exploits with CB radio became crossover hits, assuring air play on nearly every radio station featuring any form of contemporary music. Television shows and movies rapidly followed suit.

Far more ponderous though, are the snowball effects that brought the fad to an abrupt passing. Several factors came into play, each playing into the others. The first factor was a

direct effect of the fad's rapid onset: Demand began to outstrip supply. In 1975 alone, some 12 million units were ordered for retail sale. But only five million were delivered. Distributors routinely submitted duplicate orders in hopes of receiving adequate quantities.

New manufacturers entered the business, and related stock market performance would come to bear a strange resemblance to the Internet *dot-com* business boom that would occur two decades later. This market, that would prove to be sorely optimistic, caused distributors to amass excessive stockpiles of CB radio units. The marketing momentum at work in this case spiraled into what economists describe as a "hog-cycle" supply-demand imbalance which, as researcher Ting succinctly notes, typically leads to a dramatic market correction.

Another factor resulted from industry lobbying the FCC to authorize more CB channels. In the summer of 1976, the Commission responded by increasing the number of channels from 23 to 40, to be effective January 1, 1977. Sales of new 23-channel CB radios were ordered to cease after that date, but sales of 40 channel units were not permitted at all prior to that same date. This literally shortsighted transition policy gave vendors only five months to clear out their collective massive overstock of 23-channel sets. An industry panic ensued, causing retailers to dump their standing inventories into the market at "fire-sale" pricing levels. Still-new 23-channel radio closeout units were often sold at a mere 20% of cost, just in time for a heavy Christmas shopping season!

Then, as 1977 dawned, new CB radios with all 40 required channels typically sold at *ten times* the most recent pricing of otherwise comparable new CB radios, sold only a month before. And, the new 40-channel radios were in *relatively* short supply. The hog-cycle effect of overstocking, coupled with a less-than-optimally timed FCC transition policy, drove up CB radio prices (again, *relatively*) while choking the supply. The result was a temporary, but steep,

plummet in CB radio sales with a supply-and-demand dynamic that fueled an uncontrolled downward spiral that defined the end of the CB radio fad era.

CONCLUSIONS

When we step back and look at the bigger picture however, we can see that, excepting the statistical “spike” caused by the rise and fall of the CB fad, CB radio popularity has only increased over the ~45 years that 27 MHz CB radio has existed. That’s right, *consumer enthusiasm for CB radio has steadily increased, ever since 1980*, contrary to some uninformed opinions often given as “fact” by those who no longer have a stake in consumer CB radio.

Statistical normalization of course, legitimately discounts aberrations that happen to be statistically insignificant when considering a larger range of data (a range several times *larger*, that is, than the aberration—the fad spike—in question here.) Therefore, when we look at the ~45-year span of CB radio history, even just roughly normalizing the approximately four-year spread during which the CB fad occurred, we can clearly see that *CB radio sales have increased nearly steadily over the entire span.*

The number of new CB radio units sold topped one million annually, circa 1973. This was up from about 100,000 new units licensed in 1960. Overall, sales had stepped up to roughly 1.8 million annually by 1980. Since 1980, new unit sales have steadily increased to just over two million during 1989. After that time, sales dipped slightly to just under two million annually until 1995.

After 1995, CB radio annual sales have increased sharply through 1997, at a rate closely approximating that of the rise of the CB fad, circa 1973 to 1975! It is interesting to note that during these same years of the later 1990’s, the UHF Family Radio Service (FRS) was introduced (47 CFR Part 95B). It appears at this point that FRS radio popularity has

complemented, rather than competed with, 27 MHz CB radio popularity.

To date, there is no real accounting for the tens of millions of CB radios already in existence. My understanding is that the Michigan State University group's National Science Foundation study is still in process of investigating the status and use, as well as disposal of, previously sold units. Nevertheless, sales of new CB radio sets is an unimpeachable and solid measure of accelerating public interest in 27 MHz CB radio. With facts in hand rather than anecdotal observation and collective shortsighted individualistic opinion, we can assert with confidence that those who claim that CB radio popularity is dead or dying, simply do not know whereof they speak. CB radio is unquestionably alive and moreover, *growing at an escalating rate.*

Additionally, we must consider not only consumer demand, but also the immense number of *occupational and professional users of CB radio.* The American Trucking Associations, Inc. reports that 1.68 million Class 8 (semi-trailer) commercial trucks are on the road nationwide in recent years.

It is a well-known and undisputed fact that nearly all of them rely on CB radio 24-by-seven, 365, for tactical (operational) communications, professionally. To date, no alternative wireless products or technologies are on the horizon to eventually replace truckers' CB radio interoperable voice communications. While a growing number of over-the-road trucks are being equipped with satellite uplinks and wireless telephones, nothing else supplants CB radio's local *Push-To-Talk* functionality. CB radio is, and will continue to be for quite some years to come, the primary telematics technology choice among this class of occupational wireless users.

Given this, the 11-meter band in which 27 MHz CB radio thrives must be vigorously protected against interference from unlicensed (Part 15) devices as well as from any other

services *secondary* to the CB Radio Service, in or near its spectrum band. CB radio is by design, a low-power radio service, since it is intended for local “short-distance” wireless communications. Therefore, *CB radio’s weak signals need to be especially carefully protected from interference.* There are more *new* CB radio sets on the road and in homes now, than since 1980, *by far.* Some twenty times the number of new 27 MHz CB radios are being put into use every year, than in had been in 1973, and the present increase is rapidly approaching the number of new CB radios put on the air in 1975! Fact is, the number of new 11-meter CB radios being put on the air is not only *increasing*, but increasing at an accelerated rate, indicating an upward spiral in popularity and use.

ADDENDUM: HOMELAND DEFENSE

Our nation remains in the midst of the ongoing War on Terrorism, where preparedness is never an option. Emergency auxiliary communications must remain high on any individual’s list of mitigation and recovery necessities. *Given my extensive engineering experience in cellular (and other) networks,* I can attest that wireless telephones often enough fail individual call attempts during widespread emergencies and at mass casualty incidents. The ill-conceived wireless Priority Access Service (PAS) program will now further aggravate such delicate situations. Repeater systems, trunked or conventional, can certainly fail, and *high-power* commercial and amateur radio equipment drains batteries far more quickly than does a simple 4-watt CB radio transmitter. Additionally, CB radio’s inherent *simplex* mode of operation makes it totally independent of repeaters and other wireless network components. Besides its given low power consumption, there is simply less of *anything* to fail during mission-critical local civilian disaster use.

Longtime Radio Emergency Affiliated Communications Teams (REACT) activist and

life member Walt Young of Space Coast REACT in Florida explains the value of everyday citizen access to CB radio during times of widespread emergency. “The only saving grace, as I see it, are the REACT Teams and many Amateur [Radio] Teams across the country who step up to the plate to assist,” he asserts. During Hurricane Andrew recovery efforts in Florida in 1992, as well as during the recent Blackout of 2003 (according to preliminary reports), REACT team volunteers were in a number of instances the only people who could speak *wirelessly directly to the public*. Mr. Young notes this supports a Survey his team took at one of their roadside Safety Breaks. “*We asked folks if they had a CB. About 70 percent of those questioned said yes*, it may have been in a box, a closet, out in the garage, in the trunk of their car,” Young states. Regardless of whether or not this CB radio equipment was in regular use, *this majority of consumers surveyed have CB radios available for emergency use!* The public seems to be aware to go hook up (or re-hook up) these radios as needed for operation, or simply to have CB radios on standby, during disasters. Young points out that even without commercial electrical service, any citizen can quickly hook her or his CB set up to their own car battery and stick an inexpensive magnetic mount antenna onto the automobile body in order to have instant emergency wireless communication.

Specifically, Mr. Young explains that during the aftermath of Hurricane Andrew, it turned out that *REACT communications volunteers—with their mobile CB radio installations—were the only mitigation personnel able to communicate with the thousands of trucks coming into Florida with relief supplies*. Young tells us that none of the emergency radio operators there at that moment had CB radio, or were in a position to utilize that mode so, the local “Emergency Management [Agency]...called us [REACT]. We went out to the rest area just south of Malabar [on Interstate 95] and set up our communications. We would give info for truckers to go to a

staging area set up off the West Palm exit where they would then be dispatched to needed areas, rather than just going in blind and not knowing where to go...Those truckers really did appreciate it. They had no idea where they were going or where to unload. We ran it [staging area operations] for several days until the traffic slowed.”

Young concludes, “In addition, because of the roads being closed we had a packed rest area of people who could not get home. We ended up getting food donated and gave it to the people ‘camping’ there.” The Hurricane Andrew incident, “...also put us on the map to finally be recognized by Emergency Management, who had previously ignored us, and became an integral part of their operations.” And this recognition occurred in 1992, well over a decade after the passing of the CB *fad*, and some seven years *after* the introduction of the cellular telephone.

HF CB Radio Service operations at 27 MHz remain an unquestionable, unwavering and absolutely essential component of emergency wireless communications, and likewise, of Homeland Security.

IN CLOSING

It is unconscionable that the Commission would seriously consider a mode of communications delivery that specifically and deliberately causes *mass pollution* of the electromagnetic spectrum environment. *Good engineering practice* has always sought to minimize unwanted emissions. And the FCC is the statutory guardian of spectral purity (47 USC §§151, 152, et seq.). These BPL proceedings completely ignore the unproductive and obstructive radiation filth that fouls and renders the surrounding air, to all or to any degree, unusable. This is not a matter of studies, measurements, and testing. The concept of radiating HF-band signals from unshielded wires goes right down to the most basic roots of RF physics that is basic and universal knowledge among radio engineers and technicians. Promoters of BPL

are attempting to sell America a perilously faulty bill of goods, by utilizing an old technology long abandoned as functionally obsolete due to its inherent flaws. And in this process, they are leveraging a perceived technological illiteracy on the part of the Honorable Commissioners, that such a scheme would produce the desired results without also producing the unintended consequences. Additionally, among radio engineers and other persons allegedly learned in RF propagation; any who claim that BPL will not cause spectral noise and interference are either incompetent, woefully ignorant, or are bending truth to fit a political agenda. The consequences for all are very real, and they will be in practice, severe. Certain parties *will* surely be held accountable for the debacle, and I dare speculate that the technological, legal, and political fallout won't be pretty.

The 27 MHz CB radio band, along with all other *authorized* services in the HF spectrum; our national Amateur Radio Service, International Broadcasting, Maritime, Aviation, Part 90 “utility”, and most certainly NTIA military and Homeland Security/FEMA HF DX services; must be protected *completely* from any interference capable of raising the ambient noise floor. Most, if not all, HF communications involve long-distance transmission or weak-signal modes, or both. *Any compromise in the ambient noise floor level is clearly unacceptable. Any such compromise will result in catastrophic failure of all HF DX/weak-signal communications by absorbing all of these weak signals within such elevated noise level.* Some BPL proponents claim that they will eliminate radio interference by notch filtering out affected HF spectrum subbands. This solution is patently ridiculous *since the entire HF spectrum is already allocated to various licensed radio services.* Once all portions of occupied spectrum in the HF, as well as the MF and VHF bands being considered have been “notched out”, the remaining segments would allow for only a very, very narrowband—rather than broadband—distribution service,

indeed! Hence, the Broadband-over-Power-Lines concept, with the current generation of *unshielded* electrical service cables and wiring, is clearly unacceptable, and interfering radiation cannot possibly be otherwise mitigated given the inviolate laws of physics. Therefore, the instant proceeding must be dismissed, with prejudice.

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SUBMITTED ELECTRONICALLY

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